Statement of Norine E. Noonan, Ph.D.
Assistant Administrator for Research and Development
U.S. Environmental Protection Agency
Before the Subcommittee on Energy and Environment
Committee on Science
U.S. House of Representatives
March 23, 2000

Mr. Chairman and members of the Subcommittee, it is an honor to appear before you today to discuss the Fiscal Year (FY) 2001 budget request for the U.S. Environmental Protection Agency's (EPA) Office of Research and Development (ORD), and to share with you some important and exciting accomplishments of our current research. When I testified before the Committee last year, I related to you that ORD was a re-energized organization, focused solidly on providing the highest quality science in support of EPA's mission to protect human health and to safeguard the natural environment. Today, I am pleased to say that our efforts in both research and management are continuing with vigor.

The Agency's key priorities of clean air, clean water, healthy children, healthy ecosystems, and partnerships with stakeholders provide the structure for the budget request that we will discuss today. ORD is uniquely positioned to provide this support because of our expertise in environmental and human health effects and exposure, and risk assessment and risk management research. ORD's total budget request for FY 2001 is $530 million and 1972 work years, which represents the major portion of the Science and Technology request. With these resources we will continue to conduct a balanced and carefully-targeted research program that addresses such key environmental topics as particulate matter and air toxics, safe drinking water, advanced integrated ecosystem monitoring and analyses, and aggressive initiatives to protect the health of our children. Expanded partnerships with stakeholders in both the public and private sector leverage our investments in all of this work.

Last year I shared with you ORD's ambitious modernization and streamlining efforts over the last five years. We reorganized our National Laboratories and research portfolio along the Risk Assessment/Risk Management paradigm. We balanced our research activities across the two broad categories of Problem-Driven Research (to solve environmental problems of high risk and high scientific uncertainty) and Core Research (to improve the underlying scientific tools for understanding and protecting human health and the environment). We continue to enhance the linkages between these mutually reinforcing aspects of our scientific mission. ORD's combination of scientific and engineering disciplines and technical capabilities in a single research organization soundly supports EPA programs for protecting both public health and the environment. Recent work on an updated ORD Strategic Plan 2000 is reinforcing our organization's alignment around and attainment of our strategic goals. While conducting sound

science is the foundation for our success, producing results in a timely fashion to solve problems is the measure of that success. Some of our greatest successes have resulted from applying state-of-the-science integrated approaches to solving high-priority Agency problems.

This internal alignment of our research agenda has strengthened our alignment with EPA's strategic goals, thereby assuring that both our core and problem-driven research advance EPA's environmental protection mandate. ORD is committed to *excellence, relevance, timeliness, and leadership* as the means to fulfill our mission in both the short and long term. By planning our FY2001 research program within the structure of EPA's Strategic Plan, we are ensuring that ORD's research program solidly supports EPA's National Program Offices. ORD has institutionalized yearly strategic reviews with each of EPA's National Program Managers to ensure that we provide the needed scientific, engineering, and technical support for their specific regulatory activities. The long-term benefit of our realignment is demonstrated in ORD's current research plans and strategies, which chart a clear path for EPA's research emphases. ORD will continue to assure that we provide leading-edge science and engineering to support EPA's environmental decision-making.

Let me give you a few examples of the important research ORD is providing:

- ORD evaluated the overall ecological conditions of estuaries in the Gulf of Mexico, which are critical for commercial fisheries, wildlife habitat, and recreational opportunities. Results of this research (published in our report *Ecological Condition of the Estuaries in the Gulf of Mexico*) will assist resource managers and the public in focusing on solutions for the most serious problems.

- ORD established five Airborne Particulate Matter (PM) Research Centers to advance the understanding of the health effects of particulate matter by drawing upon the expertise of some of the nation's leading researchers outside of the federal government. The Centers were established via competitive grants awarded to universities through the Science to Achieve Results (STAR) program.

- An ORD scientist led the research that will support EPA decisions to protect lakes and streams from acid rain. The study examined trends in lake and stream recovery from acid rain in North America and Europe. The study, which was reported in Nature, involved investigators from nine countries, and found that recovery was occurring in some regions, with signs of likely recovery in others.

To provide a fully integrated science program across the entire Agency, ORD is developing the *Strategic Framework for EPA Science*. This Strategic Framework proposes the means of unifying and coordinating the development and use of science in the Agency. It also illustrates where effective coordination is already being done, and recommends ways to extend it further in the Agency. It requires us to use the *EPA-Wide Inventory of Science Activities* to comprehensively evaluate EPA's scientific work, then effectively plan our efforts across the

Agency ensuring we do the "right science" to support EPA's mission, and then develop Agency-wide practices for the provision and use of sound science.

ORD effectively leverages the Nation's scientific resources by partnering with other Federal Agencies on the Committee on Environment and Natural Resources (CENR) and through our Science to Achieve Results (STAR) grants to scientists in universities and not-for-profit organizations. Our partnerships are the result of multiple layers of careful integration that ensure that all external work complements and strengthens our in-house research. Partnering with Federal Agencies provides a common sense and cost-effective way for us to utilize the special expertise residing outside of our Agency, while also reducing overlapping and duplicative work. Two good examples of these cooperative enterprises are our Children's Health Centers with NIEHS, and our Ecology and Oceanography of Harmful Algal Blooms program with NOAA, the National Science Foundation, and the Office of Naval Research.

Likewise, our STAR grants program is planned in tandem with, and as an integral part of, our in-house research program. We also work extensively with other Federal agencies in developing joint Requests for Applications (RFAs) in areas of mutual interest. STAR grants enrich our expertise by recruiting the best environmental scientists and engineers from the academic and private sector through a variety of competitive grants, investigator-initiated exploratory research grants, graduate fellowships, and environmental research centers.

Finally, we have deployed a long-range program of hiring Postdoctoral scientists and engineers for three-year term appointments. Our "post docs" will provide a dynamic infusion of intellectual energy and state-of-the science expertise to ensure that we continue to produce outstanding scientists and engineers in the field of environmental protection.

EXAMPLES OF RECENT ORD SCIENTIFIC ACCOMPLISHMENTS

The following highlights provide examples of some of our recent contributions to the Agency. These showcase ORD's guiding principles of excellence, relevance, timeliness and leadership in meeting the scientific challenges of environmental and human health protection. They also provide the context for discussing our FY2001 budget proposal.

Airborne Particulate Matter

ORD's leadership in Particulate Matter (PM) research continues to produce important results supporting the establishment of air standards. EPA, under the auspices of CENR and with the help of the National Institute of Environmental Health Sciences (NIEHS), formed a PM Working Group to assure optimal federal coordination of research. The Health Effects Institute, the North American Consortium (NARSTO), and the Working Group now coordinate public/private sector outreach in this area. Further, last June, ORD awarded grants to establish five university-based PM Research Centers, and with the Office of Air and Radiation, jointly funded a set of "Supersites" to leverage our research and monitoring efforts. The National

Academy of Sciences (NAS) in their August 1999 report on *Research Priorities for Airborne Particulate Matter* applauded this improved coordination, and praised potential improvements to regulatory decision-making on PM and gains in scientific knowledge.

ORD's Dosimetry studies show that people with lung disease have more fine PM in their lungs and higher sensitivity, compared to healthy individuals. Our Exposure studies have increased our understanding of PM and co-pollutant exposures to susceptible individuals. These studies, when coupled with research on the ways in which PM produces toxicity and damages health, create a stronger scientific basis for setting PM standards. Accordingly, EPA recently submitted a first draft of the Air Quality Criteria Document for PM to the Clean Air Scientific Advisory Committee for peer review. We plan to complete the criteria document by the end of this calendar year, to support the next round of PM standards.

Drinking Water Contaminants: Disinfection By-Products

While chemical disinfection of public water systems has effectively controlled risks from waterborne microbial diseases, it can create hundreds of compounds known as disinfection by-products (DBPs) which raise other public health concerns. ORD scientists have greatly advanced our understanding of these by-products. For example, we developed special techniques to identify certain difficult-to-detect DBPs and these technologies will likely be applicable to a wide range of other DBPs.

To better understand the health risks posed by drinking water contaminants, ORD has developed a new way to evaluate the relative toxicities of 252 newly identified DBPs. This screening tool is being used to help prioritize these by-products for further health effects studies. ORD has also provided critical health effects data to determine if exposure to DBPs in drinking water poses a risk to reproduction. This information will help to ensure that the new drinking water regulations being developed by the Agency have a sound scientific basis and are protective of public health.

Assessing the Effects of Climate Change

As mandated by the Global Change Research Act of 1990, the U.S. Global Change Research Program (a coalition of 10 federal agencies) is carrying out a National Assessment of the potential consequences of climate change and variability to the United States. ORD is playing an important role in the National Assessment, which will consist of 19 Regional Assessments and 5 Sectoral Assessments. A summary of the Health Sector Assessment, sponsored by ORD, has just been published in the peer-reviewed journal *Environmental Health Perspectives*.

The Health Sector Assessment was conducted through a public-private partnership between Johns Hopkins University's School of Hygiene and Public Health, the Centers for Disease Control, and EPA. This report is unique because it is the first time a group of leading

public health experts has been assembled to assess the potential health consequences of climate change specific to the United States. Despite the wide range of scientific opinions held by the authors, they concluded that climate change and climate variability could have measurable effects on human health, though definitive predictions cannot be made at this time. If the global climate becomes warmer, some adverse health outcomes might result, such as increased heat-related deaths and illnesses, effects due to extreme weather events, and water- and food-borne disease. On the other hand, some beneficial effects may also occur, such as decreases in winter deaths due to extreme cold. Certain geographic and demographic populations (such as the elderly and young children) will be most at risk. The authors conclude that increased improvements in public health and increasingly vigilant monitoring both of climate conditions and of the nation's health status are key to protecting the health of Americans against the consequences of climate change.

In addition to contributing to the National Assessment, ORD is conducting and sponsoring targeted research on climate change. For example, a team of researchers across the country, working under a STAR grant, is investigating the ecological and climate change "drivers" for the occurrence of several diseases, including cryptosporidiosis, dengue fever, and hantavirus. Mice in the southwestern United States can carry hantavirus and thrive in rain-enriched vegetation. Satellite and other data were used to track precipitation and vegetation cover to predict rodent densities and consequent risks of hantavirus. The Department of Health and Human Services is already using the methods developed by Johns Hopkins researchers, in collaboration with the Indian Health Service and the Centers for Disease Control and Prevention, to provide early warning of hantavirus risk in the area.

Understanding and Protecting Coastal Ecosystems

Because estuaries and other coastal waters are critical for wildlife habitat, commercial fisheries, and recreational enjoyment, ORD is focusing on understanding their condition, trends in their condition, and how they can be protected. We published the *Ecological Condition of Estuaries in the Gulf of Mexico* in 1999 using data from ORD and other federal, state, and local monitoring programs to present an ecological report card on the condition of estuaries in each Gulf of Mexico state and the Gulf as a whole. High nutrient loadings are a primary concern for the Gulf of Mexico, because they can lead to algal blooms and depletion of oxygen that threaten plant and animal life. Overall, the Gulf estuaries were in fair condition for nutrients and dissolved oxygen. However, nutrient problems were observed in more than one quarter of the estuarine areas in Louisiana and Texas, and dissolved oxygen problems were observed in Alabama. In addition, all Gulf states were rated as having severe problems with wetland loss.

This report is a prototype for the national report that EPA's Coastal Initiative will produce. Under the Coastal Initiative, ORD is leading a five-year National Coastal Assessment involving all 24 coastal states, plus Puerto Rico. The program will allow each state to assess the conditions of its coastal waters (beginning with marine estuaries) and allow conditions to be aggregated at regional and national levels. EPA and the states have agreed to consistent measures of conditions (such as water quality, sediment quality, and status of fish communities)

as well as a common sampling design. This snapshot of condition will form the baseline health assessment for the Nation's estuaries, and will serve as a reference for the impacts of invasive species on these systems. In 1999, small estuaries in California, Oregon, and Washington were assessed to contribute to the Western Pilot of the Environmental Monitoring and Assessment Program (EMAP). The Western Pilot, which builds on the success of EMAP's Mid-Atlantic Integrated Assessment (MAIA), will sample estuaries, streams and rivers, and landscapes in 12 western states through the year 2004.

PEER-REVIEWED RESEARCH STRATEGIES AND PLANS

Our peer-reviewed research strategies and plans provide the direction for our research programs. We have completed seven research strategies and plans, the latest of which is the joint ORD/Office of Water Action Plan for Beaches and Recreational Waters. Three strategies, (PM Research Strategy, Mercury Research Strategy, and Environmental Risks to Children Research Strategy) have been externally peer reviewed, and an additional five are under development. I have attached to this statement a list of our completed and draft research strategies and plans. (Final plans and external review drafts are posted on ORD's Home Page on the World Wide Web.) By developing these peer-reviewed strategies and plans, we are confident that we have a comprehensive research program that addresses today's most pressing environmental issues. Taken together, our accomplishments, current work, and strategies for future research point to a sound, relevant, and forward-looking environmental research program that solidly supports the Agency's strategic goals. This then is the background against which we present our FY 2001 research program.

EPA'S FY 2001 SCIENCE AND TECHNOLOGY BUDGET

The Agency's total FY 2001 request in the Science and Technology (S&T) account is $674.3 million and 2464 total work years, an increase of $32.5 million and four work years from FY 2000. The S&T account, created in 1996, funds the operating programs of the Office of Research and Development, the Office of Air and Radiation's Office of Transportation and Air Quality, and the Program Office laboratories. These organizations provide significant scientific, engineering, and technical expertise in meeting the Agency's broad array of environmental goals. The S&T account allows the Agency to utilize a variety of skills and expertise, regardless of their organizational location.

ORD's total FY 2001 request is $530 million and 1972 work years. Of this total, ORD's FY 2001 request in the S&T account is $492.5 million and 1848 work years. The remaining $37.5 million and 124 work years are in accounts other than the S&T account to support the Superfund, Leaking Underground Storage Tank, and Oil Spills research programs.

The President's FY 2001 request reflects the Administration's continued commitment to sound science at EPA. The Agency's statutory responsibilities are bound closely to scientific knowledge of human health and environmental problems, and it is therefore critical that research

and scientific assessment be integrated with EPA's policy and regulatory activities. In addition, the increasingly complex issues facing the Agency necessitate a high-quality, integrated research program in order to develop sound scientific bases for its decisions. Key Administration research priorities in the FY 2001 request for EPA include:

- **Particulate Matter** – Current data on chronic health effects from PM exposure are very limited, yet available data indicate that these effects are substantial. In 2001, EPA is devoting resources to support PM chronic epidemiology research to evaluate the role of chronic PM and co-pollutant exposure in producing death and disease, and to assess the most prominent PM health risks.

- **Drinking Water Research** – The Safe Drinking Water Act Amendments of 1996 require EPA to publish a list of unregulated contaminants to aid in priority setting for the Agency's drinking water program. The existing Contaminant Candidate List (CCL) categorizes 60 chemicals and microbes where additional research in the areas of health effects, analytical methods and/or treatment is necessary to provide a sound scientific basis for regulatory decision making.

- **Global Change Research** – Increases for EPA's support to the Global Change Research Program will enable us to focus on integrated human health and ecosystem assessments, on topics like the potential spread of vector-borne and water-borne disease. Integrated assessments focus on the interactions of multiple stressors and their combined effects. The four priority areas for these assessments will be human health, air quality, water quality, and ecosystem health (including wildlife and biodiversity).

Our FY 2001 budget request builds upon ORD's significant accomplishments, supports the Agency's mission, and provides the scientific and technical information that is essential for EPA to achieve its long-term goals. The research and development program outlined in our budget request reflects both ORD's highly effective in-house research program, and our efforts to partner and work with other research organizations. Our resources are spread over eight of the ten Agency strategic goals, focusing on core science issues that cross environmental media and on more specific problem-oriented research. I would like to briefly highlight ORD's planned research contributions to each of these eight goals.

<u>Goal 1 – Clean Air.</u> EPA's particulate matter (PM) research program provides the scientific basis for the review and implementation of PM NAAQS. The Agency is continuing to consult with NAS as it works closely with other Federal research organizations, academia, and the private sector to implement a research program consistent with NAS recommendations. Accordingly, the Agency will expand its PM epidemiology research to evaluate the role of chronic PM and co-pollutant exposure in causing death and disease.

The Agency will also continue its tropospheric ozone research in the areas of risk assessment, atmospheric sciences and risk management. EPA's air toxics research will focus on urban toxics, fuel/fuel additives, and low-emitting vehicles to improve the knowledge underpinning decisions required by the Clean Air Act on residual risk, area source risks, and mobile source risks. The Agency will emphasize research on relating ambient concentration of air toxics and human exposure and on risks from mixtures.

Goal 2 – Clean & Safe Water. In support of the Safe Drinking Water Act priorities, EPA's drinking water research program will continue to evaluate the nature and magnitude of waterborne diseases, conduct research on sensitive sub-populations, and develop analytical detection methods for contaminants of regulatory interest. In 2001, drinking water research will focus on filling key data gaps for priority drinking water contaminants, with an increased emphasis on chemicals and microbial pathogens on the Contaminant Candidate List (CCL). The Agency is requesting additional funding to support research on contaminants identified on the CCL, as well as other drinking water research priorities, in accordance with existing research plans and the CCL Research Plan that is currently being developed.

Aquatic stressors research will focus on the development of models for determining total maximum daily loads (TMDLs), risks posed by chemical pollutants to wildlife, contaminated sediments, and dynamics of ecosystem response to eutrophication and nutrient loadings. EPA will also continue to develop and validate effective watershed management strategies for controlling high volume and toxic Wet Weather Flows, and develop effective evaluation tools to aid timely and informed decisions on beach advisories and closures.

Goal 3 -- Safe Food. The Food Quality Protection Act (FQPA) mandates a single, health-based standard for all pesticides in all foods and provides for special protections for infants and children. The Act identifies clear science needs consistent with evaluating potential pesticide exposure pathways and effects, and the need to review more complex factors (such as cumulative exposure and effects, and multiple routes of exposure). Accordingly, in FY 2001 the Agency will continue to develop aggregate and cumulative exposure models of children and will start research on impacts of exposures and develop computer models to determine cumulative risk for given sets of exposure conditions.

Goal 4 – Preventing Pollution and Reducing Risk. Research will continue to develop exposure data, health risk assessment methodologies, and control technologies to improve risk characterization and reduce community exposures to environmental chemical stressors. In FY 2001, the Agency will continue to cooperate with National Cancer Institute, NIEHS, and National Institute for Occupation Safety and Health on the *AgHealth Study*, which will monitor the health of a cohort of thousands of pesticide applicators and their families over 10 or more years. One aspect of EPA's involvement will be to evaluate how accurately the study questionnaire can be used to predict

applicator exposure to potentially hazardous substances. The study is intended to improve understanding of short- and long-term health risks from pesticides, fertilizers, and other substances found in agriculture, which ultimately may be invaluable in improving public health.

Goal 5 – Better Waste Management. The Superfund Innovative Technology Evaluation (SITE) program will continue to address a wide range of remediation and characterization issues. In FY 2001, the SITE program will initiate studies on ecological samplers and bio-sensors, and will continue evaluations of innovative technologies dealing with priority remediation problems. Also in FY 2001, ORD will increase funding for its Superfund Research Center program, including Minority Centers. Lastly, we will provide resources in support of the Agency's RCRA corrective action initiative by providing a wide range of technical support activities to the states.

Goal 6 – Reducing Global and Transboundary Environmental Risks. In FY 2001, the Agency will conduct research and assessment activities to examine the potential effects of climate change and climate variability on human health, air quality, water quality, and ecosystem health. These activities will focus on developing integrated human health and ecosystem health assessments, such as an assessment of the potential spread of infectious diseases due to the impact of climate change on ecosystems. As mandated by the Global Change Research Act of 1990, the interagency United States Global Change Research Program (USGCRP) will conduct the Second (Post-2000) Assessment of the consequences of global change for the United States. Specific assessments to be initiated or completed in 2001 include assessments of the potential consequences of extreme weather changes on death and disease, and on changes in air quality.

Goal 7 – Empowering People/Right-to-Know. In FY 2001, the Agency's Risk Assessment Forum (RAF) will provide guidance for risk assessment to improve the scientific basis for decision-making. The Forum will focus on the areas of cumulative risk assessment, ecological risk assessment, and risk assessments for children. Efforts will result in technical guidance on the identification of appropriate age groupings for exposure assessments for children, and technical issue papers and a framework for preparing cumulative risk assessments.

In addition, to enhance the availability and utility of data, information, and tools for environmental decision making, the Agency will develop or update consensus human health assessments of high-priority environmental substances and make them publicly available on the Integrated Risk Information System (IRIS).

Goal 8 – Sound Science. ORD's research investments in this Goal are arrayed across the following four long-term objectives:

Ecosystem Protection Research. We must understand the current condition of ecosystems, stressors changing that condition, the consequences of those changes, and what can be done to prevent, mitigate, or adapt to those changes in order to balance the growth of human activity and protection of the environment. In FY 2001, EPA will continue to support ecological monitoring, modeling, risk assessment, and restoration research to address these issues.

In FY 2001, the Western Environmental Monitoring and Assessment Program (EMAP) study will be a primary activity of EPA's monitoring research, as will the second year of the national coastal monitoring program. The coastal study will help us cost-effectively define the condition of the estuarine environment, nationally and regionally, in cooperation with multiple agencies and states. The Regional Vulnerability Assessment (ReVA) project, begun as part of EPA's FY 2000 initiative for the National Science and Technology Council's cross-Agency Integrated Science for Ecosystem Challenges (ISEC), will also continue in FY 2001. ReVA will combine modeled projections of changes in stresses (e.g., pollution deposition, land use change) with information on sensitive ecosystems in order to identify the greatest environmental risks in the next 5-25 years, and where those risks are likely to occur.

Human Health Research. Human health risk assessments assist the Agency with environmental decisions aimed at protecting public health. The goal of the human health research program is to improve these assessments by reducing uncertainties that arise from "default assumptions". Default assumptions are developed and used when specific research data is unavailable to complete an assessment. ORD's research will improve our understanding of how humans are exposed to chemicals, how chemicals are processed once inhaled, ingested or absorbed through the skin, and how chemicals produce adverse effects. Research will also focus on the risks posed by cumulative exposures to chemicals and whether populations are at greater risk due to their age, gender, or other factors. In 2001, the Agency will continue to focus on children as a susceptible population. These issues will be addressed not only through our in-house research program but also through our STAR program, where we are sponsoring nine university-based pediatric research centers, five of which focus on childhood asthma.

Pollution Prevention and New Technologies. Research in this area focuses on the development of tools and technologies that are more quantitative and easier for stakeholders and decision-makers to use than those currently available. The Environmental Technology Verification (ETV) Program will continue to verify the environmental performance of technologies in all media through its twelve pilots, with broad support from industry and other Federal partners. This program has been and continues to be both a programmatic and budgetary success. By leveraging outside resources, we have been able to reduce funding for the program and still maintain a consistent level of verifications. We will enhance ETV Program outreach efforts through the ETV web site, national conferences and workshops, and State-permitter training. In addition, ORD will support the Agency's persistent, bio-accumulative toxics (PBTs)

Initiative, which seeks to prevent, minimize, and, when possible, eliminate PBTs. ORD will focus its PBTs research efforts on transport and fate, targeted risk management, monitoring and methods development, and science workshops.

Emerging Risk Research. Efforts in this area will include research on endocrine disrupting chemicals (EDCs) and on mercury. ORD will continue to conduct integrated toxicology and exposure studies in ecological systems and human populations with suspected EDC contamination or exposure. We will identify major sources of EDCs entering the environment, and will develop risk assessment and risk management data. Our external Exploratory Grants program will leverage our research efforts in multi-disciplinary human and laboratory studies which explore the reproductive and developmental effects of EDCs. These studies will focus on EDCs individually and in mixtures at low, ambient levels relevant to human exposures.

ORD's mercury research program was established in response to growing scientific concern and public awareness regarding potential effects of human and environmental exposure to mercury. ORD's ongoing mercury control and prevention research will support the Agency's FY 2001 determination about whether mercury emissions from utilities should be regulated. If it is determined that mercury should be regulated, the Agency's research will also support needed mercury control rules. Mercury monitoring and modeling research will focus on understanding the problems posed by mercury releases to the environment. Research in this area will increase through FY 2000-2004 to allow a better understanding of this issue for future regulatory efforts on mercury.

ORD'S RESEARCH GRANT PROGRAM

We created the STAR Program six years ago to encourage the Nation's best scientists to participate in the ORD research program. We do this through targeted Requests for Applications (RFAs) that focus on the Agency's priority issues. Thus, STAR is not a stand-alone grant program, but rather complements and supports the work done in ORD laboratories. Each year, we award about 175 grants, resulting in a total of 550 - 600 active grants. These grants infuse ORD's research with the creativity of several thousand professors, students and other researchers. In fact, today we have active grants in 49 States, Puerto Rico, Guam and the District of Columbia. In addition, we award about 100 fellowships yearly for graduate study in environmental fields to help ensure that the future scientists, industry professionals and state and local government officials will be ready when we need them. In FY 2001, ORD will work to ensure that opportunities to compete for STAR grants are available to Historically Black Colleges and Universities (HBCUs) and Hispanic Serving Institutions (HSI).

Because mission relevance is critical to STAR, scientists from Agency Program Offices and Regions help us plan the research for which we will publish RFAs. After the independent peer review process is complete, EPA Programs and Regions help us select the research that should be considered for support. We believe that our STAR peer review system, which

parallels that of the National Science Foundation, and in which we have used more than 1000 independent scientists, is now second to none. Further, by working with other federal agencies in publishing joint RFAs in areas of common interest and concern, over one third of our RFAs now include other agencies. This has allowed us to develop broader, more comprehensive programs that leverage resources and provide prompt and efficient results. STAR grantees are at the forefront of each of the major research areas critical to EPA's mission. The Science Advisory Board (SAB) and ORD's Board of Scientific Counselors (BOSC) have begun a joint, multi-phase assessment of the STAR Program. The first phase, an assessment of the way in which the STAR Program is organized and managed, has been completed. The joint committee recommended a fuller assessment of the impact of STAR grants be started in about two years. They will work with ORD to develop appropriate measures to use for this assessment.

CONCLUSION

In ending my testimony before you today, I would like to emphasize ORD's commitment to not only provide the sound science to support EPA's regulatory mandates, but to assume the national leadership in producing the knowledge that will help us solve the critical problems of the 21st Century. Sound science, on a foundation of rigorous peer review, remains a critical mainstay of our work. While conducting sound science is the foundation for our success, producing results in a timely fashion to solve problems is the measure of that success. Further, ORD's continuing innovations in the way we perform and manage research will optimize the delivery of RESULTS to our Agency customers, stakeholders, and the American people.

COMPLETED RESEARCH STRATEGIES AND PLANS

Action Plan for Beaches and Recreational Waters

Waste Research Strategy

Pollution Prevention Research Strategy

Ecological Research Strategy

Research Plan for Endocrine Disruptors

Research Plan for Arsenic in Drinking Water

Research Plan for Microbial Pathogens and Disinfection By-Products in Drinking Water

RESEARCH STRATEGIES AND PLANS BEING DEVELOPED

Particulate Matter Research Strategy (in external peer review)

Environmental Risks to Children Research Strategy (in external peer review)

Mercury Research Strategy (in external peer review)

Global Change Research Strategy

Human Health Risk Assessment Research Strategy

EMAP Research Strategy

Air Toxics Research Strategy

Drinking Water Contaminants Candidate List Research Plan

Norine E. Noonan, Ph.D.
Assistant Administrator for Research and Development
US Environmental Protection Agency

Dr. Norine E. Noonan joined EPA as Assistant Administrator for Research and Development in 1998.

Prior to joining EPA, Dr. Noonan was Vice President for Research and the Dean of the Graduate School at the Florida Institute of Technology. From 1987 to 1992, Dr. Noonan served as Chief of the Science and Space Programs Branch of the Energy and Science Division, for the Office of Management and Budget in Washington, D.C. From 1983 to 1987, Dr. Noonan served as a budget and program analyst for the Science and Programs Branch. From 1982 to 1983, Dr. Noonan served as an American Chemical Society Congressional Science Fellow for the United States Senate Committee on Commerce, Science, and Transportation. From 1981 to 1982, she served as an expert consultant for the congressional subcommittee on Science, Research, and Technology. Dr. Noonan is a Member and Fellow of the American Association for the Advancement of Science and is a Member of the American Society for Cell Biology, Sigma Xi, and Phi Beta Kappa.

Dr. Noonan received her B.A., summa cum laude, in zoology from the University of Vermont and M.A. and Ph.D. degrees in cell biology from Princeton University.